Chem124 Spring 2016 Syllabus

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Office hours: TBA
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Course Philosophy and Aims:

This course is part of a two semester sequence designed to enhance the material from the general chemistry lecture course and prepare you to enter a scientific research environment. A main focus of the curriculum this semester is how to use data collected in lab to draw conclusions about the subject of inquiry. This second semester course will also involve more laboratory skills than the first semester. The skills (both mental and physical) that you will learn in these courses are applicable to any scientific discipline that you may pursue.

Location and time:

There are 6-7 different sections that meet each week. Most labs will follow a 2-week sequence, with the experiments performed the first week, and a discussion of data analysis taking place in the second week**.** During Lab weeks, students will meet in room 214 DBH for a brief pre-lab lecture before moving to room 200. Discussion groups will meet in room 210 DBH. During your first lab, you will be assigned to one of 2 discussion groups for your section.

Schedules for each individual section are posted on Canvas. Given the complex nature of the scheduling for this course, it is strongly recommended that you consult YOUR sections' schedule on Canvas.

Course Requirements and Guidelines:

General Requirements:
Attendance is mandatory for **every** lab and **every** discussion session (see "Missed Labs" section below for details). If you do not attend a lab **OR** a discussion, you will receive zero points for that **entire** lab. **Regardless of the reason for missing lab/discussion, you should absolutely contact Dr. Kincaid ASAP.** It is also the student's responsibility to document his/her attendance by signing in for each lab and discussion (including any make-up sessions). Punctuality is also important**; points will be deducted from your grade for tardiness**. **Extremely late students (>15 minutes) will not be admitted to lab, except at the instructor's discretion.**

For each lab, you will need to turn in the following: completed pre-lab, copies of your data, initial data analysis, and final lab report. See "Lab Reports" section in Appendix III for details.

It is assumed that students have a knee-length lab coat and a carbon copy notebook from CHEM 123. If not, these may be purchased from the CGSA or other sources; contact Dr. Kincaid for details. The cost for other required materials is covered by the fee paid during registration, and includes:

- Lab Manual
- Disposable materials and chemicals (provided as needed in the laboratory)

Safety Regulations:

Whenever you are in the lab, it is vital that you be mindful of your safety and the safety of others. At the beginning of the semester, you will need to sign a form on Canvas *(under "quizzes")* that you have read and agree to abide by the lab safety rules. These rules can be found in the Safety section of the lab manual.

You must wear the following Personal Protective Equipment (PPE) at all times while in the lab (no exceptions):

- Safety glasses/goggles
- Long-sleeved, knee-length lab coat
- Your skin is a target for chemicals, so cover it all up one way or another! You must wear:
    - Clothing that fully covers you to the ankle
    - Closed-toe shoes with backs (perforated shoes or sandals are not allowed)
- Loose clothing, jewelry, and unrestrained hair may pose additional risk and should be avoided

Based on the experiment or procedure, additional PPE such as gloves may be required. Laboratory gloves should only be worn inside the laboratory.

Furthermore, the instructor or TA must always be physically present for you to work in the lab.

There will be **absolutely no eating or drinking** allowed in the lab. Period. It is also strongly recommended that you wash your hands upon leaving the lab to avoid accidental ingestion of chemicals.

Phones, ipods, etc. are to be silenced or turned off, and left in your bag. Use of phones as calculators poses a risk of contaminating them with chemicals. If you choose to access any of your personal items during lab, remove any gloves before doing so to avoid contaminating your backpack, etc.

Students will not be allowed to work the lab if they fail to meet these safety regulations

Lab Reports:

The lab procedures and reports are in the lab manual. Prior to lab, you will need to read the experiment for the week (including any background reading), and complete a pre-lab assignment prior to coming to lab. The prelab assignment is posted on Canvas, but you cannot access it until you have watched the prelab video. You should come to lab prepared to discuss the lab in-depth and be able to make predictions about any outcomes. The pre-lab assignment must be handed in at the beginning of lab (before the pre-lab talk). **Any student who does not hand in a pre-lab assignment will NOT be allowed to perform the lab.**

During lab, you will record your data in your lab notebook; the specific format and requirements for the report will be explained in the individual lab procedures. Copies of your data must be turned in to your TA at the end of lab. Preliminary analysis of your data will be due to your discussion TA at the beginning of discussion the following week. A final lab report, including data analysis and additional questions, will be due to your lab TA at the beginning of your next lab section (2 weeks after data collection). For Labs with no discussion, the final report will be due 1 week after performing the lab.

Honor policy: Lab reports fall under the scope of Rice's honor code. Discussion is an important part of the scientific process, and you are encouraged to ***discuss*** the lab with your partner, TAs, and classmates. However, you must write your own report. **Be mindful of the difference between collaboration and copying**. Lab partners must individually write their own reports, including all calculations, conclusions, and graphs.

It's **OK** to:

- Share raw data with your lab partner.
- Consult any written source except graded lab reports and keys. Always cite any source used.
- Discuss the approach to analyzing data or solving a problem.
- Discuss and compare your final results.
- Ask your TA for help.

It's **NOT OK** to:

- Report data that you did not measure (unless given permission, and cited appropriately)
- Copy or share computer files, even with your lab partner (except for data files).
- Copy graphs, or print 2 copies of the same graph.
- Copy someone else's calculations.
- Copy answers to problems in the reports.
- Use an answer key to help with analysis/reports.

Lab Notebook:

Your lab notebook is a record of what you DO and OBSERVE in lab. It is not a simple collection of data tables or a jumble of disorganized scribbles. An ideal notebook allows another scientist to understand and recreate your experiment from only what is written down. See Appendix III for more information. You will use carbon copy style notebooks, so you can turn in the copies to your TA at the end of each lab. Additional data analysis and final reports will be done outside of lab, and not recorded in the notebook, but all of the data used must come from the information that you recorded in lab, unless you have approval to use another student's data and state where it came from and why.

Grading: Each lab will be worth 65 or 105 points. These points will be divided as follows:

- Pre-lab assignment (10 pts)-due at beginning of lab
- Procedure and Data Collection (25 pts) due at end of lab
- Initial Data analysis (20 pts, if applicable) due at beginning of discussion
- Final Report (25 or 40 pts) due at beginning of the next lab
- Lab TA points (5 points awarded for safety and tidiness)
- Discussion TA points (5 points awarded for participation)

Initial data analyses will not be accepted late. Final reports will be accepted late, with a penalty of 10 pts per day late. Points will also be deducted for tardiness to class.

At the end of the semester, your total lab score will be scaled to 250 (excluding extra credit points) and added to your points from CHEM 122 (750 possible) to give your final letter grade for both courses (out of a total of 1000 points).

Regrading:

If you think you were graded incorrectly, you may submit your report for a regrade. **Submit all regrade requests directly to Dr. Kincaid**; do NOT submit a regrade request to your TA. You have **1 week** after a lab is returned to you to submit a regrade request. Failure on your part to collect a graded report does not ensure that you will be given additional time to request a regrade. To ensure proper record keeping do NOT write on

your original lab report; instead, include a separate (small) sheet of paper with your reasons for requesting a regrade.

Missed labs:

If you fail to attend a lab OR discussion, you will receive a zero for the entire lab. It is your responsibility to contact Dr. Kincaid as soon as possible when you miss a lab or discussion. For approved university commitments, contact Dr. Kincaid at least one week in advance of your absence so that you can reschedule to attend a different section. For unscheduled absences, such as severe illness, contact Dr. Kincaid as soon as you realize you will not be able to attend, and arrangements can be made to make up the lab. In the event that you need to make-up a lab or discussion, please consult the overall schedule (Page 1) to be aware of when other sections are performing the same experiment. (You still need to contact Dr. Kincaid to approve the make-up session.) Please note that for missed labs/discussions as well as make-up lab/discussions, your lab report will still be due at the regularly scheduled time, unless otherwise approved.

Regardless of the reason for missing lab/discussion, you should absolutely contact Dr. Kincaid ASAP.

Lab Citizenship:

Anyone who pursues a career in the sciences will work within a group of other researchers in one way or another (unless you are extremely rich and extremely eccentric). Because of this, it is important to learn how to be a good lab citizen. Good lab citizenship generally can be summed up by the golden rule: treat others as you would like to be treated. Specifically, some key components are:

- ***Respect*** *for others in conversation and space use*
- ***Tidiness*** *in common use areas*
- ***Conscientious*** *use of shared reagents*
- ***Openness*** *to scientific discussion with labmates*
- *Leaving your work area in a* ***clean*** *and* ***safe*** *state*

Students under 18:

Your parents or legal guardian are required to sign a "Release and Hold Harmless Agreement" before you can work in the lab. Download this form from Canvas and turn in a signed paper copy to Sofia Medrano. If you have already done this for CHEM 123, you do not need to do it again for CHEM 124.

Special Needs:

Any student with a disability requiring accommodations in this class is encouraged to contact the instructor during the first two weeks of class. All discussions will remain confidential. Students should also contact the Disabled Student Services Office in the Ley Student Center.

Lab topics:

Lab #	Lab Topics
1	Gas Laws
2	Kinetics
3	Equilibrium
4	Colligative Properties
5	Simple Acid/Base titration
6	Polyprotic acid titration and Buffers
7	Electrochemistry